To: Card, Joan[Card.Joan@epa.gov]; McGrath, Shaun[McGrath.Shaun@epa.gov]; Beeler, Cindy[Beeler.Cindy@epa.gov]
Cc: Hestmark, Martin[Hestmark.Martin@epa.gov]; Stavnes, Sandra[Stavnes.Sandra@epa.gov]
From: Schmit, Ayn
Sent: Thur 1/22/2015 9:18:44 PM
Subject: FW: Groundwater article
gwat12272.pdf

fyi-

I wanted to share with you this recent article in Groundwater on Pavillion, as well as some very helpful reflection from Greg (below) on the content and accuracy of the article.

Ayn

Ayn E. Schmit

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From: Oberley, Gregory
Sent: Wednesday, January 21, 2015 11:39 AM
To: Mylott, Richard; Hestmark, Martin; Stavnes, Sandra; Schmit, Ayn
Subject: Groundwater article

All in all I think EPA deserved this analysis with a few corrections (but nothing major)

A couple of corrections to note:

•□□□□□□□ The author extensively used information from the Itaska "report" which was paid for by Encana to provide comments on the Draft Pavillion report

•□□□□□□□ This Itaska report incorrectly used geologic information (specifically referring to the Lysite and Cabin Creek members of the Wind River fm) from a portion of the basin that USGS specifically only relates to areas more than 50 miles from the Pavillion project area. The original comments from Itaska and repeated in this article don't really make sense anyway in terms of what it means for groundwater movement in the area.

•□□□□□□□ The same Itaska report is referred to in order to claim that portions of the Wind River fm exceed 10,000mg/l TDS. USGS reports do not report TDS in the Wind River or the Ft. Union above 10,000 mg/l and the highest reported concentrations are approximately 5,000 TDS.

•□□□□□□□ Only one artesian (flowing) well is currently known in the Pavillion Project area.

•□□□□□□□ Although the article consistently points out EPA data issues, it uses a newspaper article (also referenced by the Itaska comment report) to establish that methane gas existed in the Wind River fm. No USGS, Fremont County, Tribal or Bureau of Reclaimation reports have ever made this claim. My point here is that EPA is not allowed to use dubious data but anyone else can.

•□□□□□□□ The author also mentions the "antifreeze spill" that was absolutely dismissed by the landowner who Encana claimed made the observation.

I actually agree with a lot of what was mentioned under the Analysis section of the article including:

•□□□□□□□ Failure to recognize the significance of the investigation (a little unfair)

•□□□□□□□ Insufficient planning and peer review (also insufficient funds to do a thorough investigation)

•□□□□□□□ Unclear communication of findings (see my comment below)

My take away from this experience is that our biggest mistake was collecting samples. We should have just thoroughly pointed out four contributing factors to groundwater problems: 1) *shallow gas production,* 2) *poor gas well construction practices that did not incorporate the*

specific known hydrogeologic characteristics of the Wind River formation, 3) *unlined pits were used for waste "containment"* and 4) *fracturing in a USDW that is currently being used as a source of drinking water.* All are problematic individually and when combined are a recipe for problems related to groundwater contamination.

And one last point I'd like to emphasize that the article pointed out concerning clarity of the Pavillion report. I do think that the report could have been more succinct in presenting our findings and some of that fault falls onto the authors. However, when we are attempting to "adjust tone" rather than just be clear in what we have concluded, we tend to end up with muddled conclusions. I didn't see any analysis in this article on whether the tone of the report was appropriate. To quote the article, "Conclusions should be supported by the data, unambiguous, and internally consistent within the report."

The article also implied that due to lack of clear statements the public and media were able to run with their interpretations. That said even pure science does not always end up with a clear answer but many times when first trying to understand a particular problem science will use multiple lines of evidence to point in a direction that will eventually lead to a more clear understanding. I think we all need to give ourselves some leeway in being able to allow for corrections during initial investigations into practices that may impact health or the environment.

I'm just sayin

Gregory Oberley

Environmental Scientist

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